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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,551	02/09/2004	Ken Furukuwa	81716.0120	1137

26021 7590 11/03/2006

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EXAMINER	
NORRIS, JEREMY C	
ART UNIT	PAPER NUMBER
2841	

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/774,551	FURUKUWA, KEN	
	Examiner	Art Unit	
	Jeremy C. Norris	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-11 and 17-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-11 and 17-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/223,973.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by US 5,229,549 (Yamakawa).

Yamakawa discloses, referring primarily to figure 6, a ceramic circuit board comprising; a ceramic substrate (1) having a through hole (2); a metal column (7) arranged within the through hole; and metal circuit plates (5, 6) attached to both surfaces of the ceramic substrate in such a way as to stop up the through hole, wherein the metal circuit plates attached to both surfaces of the ceramic substrate are connected to each other by the metal column, and wherein, between an inner wall surface of the through hole and an outer wall surface of the metal column is secured a space defining a cavity, wherein the cavity is free from material (col. 2, lines 30-35), wherein the space exists along the entire length of the metal column (col. 2, lines 10-40) [claim 9].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa in view of US 4,816,323 (Inoue).

Regarding claims 10 and 11, Yamakawa discloses the claimed invention as described above except Yamakawa does not specifically state that the metal circuit plate [claim 10] or the metal column [claim 11] are made of copper or aluminum. However, it is well known in the art to form conductive elements of copper as evidenced by Inoue (col. 3, lines 55-60). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use copper for the conductive plate and column in the invention of Yamakawa. The motivation for doing so would have been to use a relatively inexpensive highly conductive material. Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

Claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa.

Regarding claim 17, Yamakawa discloses the claimed invention except Yamakawa does not specifically state that the distance between the inner wall surface of the through hole and the outer wall surface of the metal column is in a range of 30 to 200 μm [claim 17]. However, such a modification would simply involve a change in size, which is well known to the ordinary artisan. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form the gap to be in a range of 30 to 200 μm as is known in the art. The motivation for doing so would have been to have a sufficient gap without compromising the thickness needed for signal transmission. Furthermore, it has been held that more than a mere change of form is necessary for patentability. Span-Deck, Inc v. Fab-con, Inc. (CA 8, 1982) 215 USPQ 835. Moreover, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering that optimum or workable ranges involves only routing skill in the art. *In re Aller,* 105 USPQ 233.

Similarly, regarding claim 21, Yamakawa does not specifically disclose that the metal column has a diameter of 200 μm or more [claim 21]. However, such a modification would simply involve a change in size, which is well known to the ordinary artisan. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form the column to be 200 μm or more as is known in the art. The motivation for doing so would have been to have a sufficient thickness needed for signal transmission. Furthermore, it has been held that more than a mere change of form is necessary for patentability. Span-Deck, Inc v. Fab-con, Inc. (CA 8, 1982) 215 USPQ 835. Moreover, it has been held that where the general conditions of a claim are

disclosed in the prior art, discovering that optimum or workable ranges involves only routing skill in the art. *In re Aller,* 105 USPQ 233.

Regarding claim 18, Yamakawa discloses all the features of the claimed invention as applied to claim 9 above, but does not disclose the circuit plate has its surface plated with a layer made of nickel. However, nickel plating is well known in ad for increasing the adhesiveness of the circuit plate to avoid the problem of peeling. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to provide nickel plating to the circuit plate of Yamakawa, in order improve the adhesiveness to avoid peeling.

Regarding claim 19, Yamakawa discloses all the features of the claimed invention as applied to claim 18 above, but does not disclose the plate layer made of nickel- phosphorous alloy containing phosphorous in an amount of 8 to 15 wt%, as claimed in claim 19. However, the claimed material is known in the art to be used in the circuit board. Further, it has been held to be within the general skill of a worker in the ad to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to provide the circuit board of Yamakawa with the plate layer made of the material as claimed as it is known in the art

Regarding claim 20, Yamakawa does not specifically disclose that the plate layer is 1.5 to 3 μm thick [claim 20]. However, such a modification would simply involve a change in size, which is well known to the ordinary artisan. Therefore, it would have

been obvious to one having ordinary skill in the art at the time of invention to form the plate layer to be 1.5 - 3μm as is known in the art. The motivation for doing so would have been to have a sufficient thickness for protection without needlessly increasing the overall height of the device. Furthermore, it has been held that more than a mere change of form is necessary for patentability. Span-Deck, Inc v. Fab-con, Inc. (CA 8, 1982) 215 USPQ 835. Moreover, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering that optimum or workable ranges involves only routing skill in the art. *In re Aller,* 105 USPQ 233.

Response to Arguments

Applicant's arguments filed 21 August 2006 have been fully considered but they are not persuasive. Applicant alleges that although Yamakawa does disclose a gap "A material such as a conductor pattern or a solder is in this gap". However, this is merely an assumption as Yamakawa does not ever disclose or suggest that material is in this gap. Indeed Yamakawa states that any such conductor pattern is only formed over the upper and lower openings, with no mention of any material located in the gap (col. 2, lines 25-35), which is direct contrast to Applicant's allegation. Thus Applicant's traversal of the rejection on this ground is deemed unsuccessful.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCSN

Dean A. Reichard 10/30/06

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